WPS3512

Policy Mix, Public Debt Management and Fiscal Rules: Lessons from the 2002 Brazilian Crisis[1]

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Abstract

Despite significant progress in economic reform throughout the 1990s and an exemplary development of the policymaking framework in the second part of the decade, Brazil suffered a major public debt and currency crisis in 2002. Though the political origin of the uncertainty cannot be ignored, the paper identifies other sources of uncertainty emanating from the policymaking framework: fiscal policy was not responsive to the shocks, public debt instruments were used with several objectives to stabilize the currency and lengthen maturity, and there was inadequate supervision of agents holding public debt. Most of the flaws have been fixed following the crisis: the primary fiscal balance has been increased, sending the signal that it is a flexible instrument that will be used to ensure commitment of the sovereign to honor its obligations; the central bank formally transferred to the Treasury the remaining debt-issuance functions, facilitating a more adequate balancing of different risks involved in debt management; and mutual funds' public debt holdings are better regulated, ensuring that end-investors have the proper information to assess the risk of the institutions in which they invest.

World Bank Policy Research Working Paper 3512, February 2005

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[1] This is a revised version of the report "Brazil: Lessons for a More Robust Policymaking Framework" (Report 2834, March 2004) Eliana Cardoso, Edgardo Favaro, and Luis Serven were peer reviewers and provided valuable comments. Fernando Blanco, Mauricio Carrizosa, Augusto de la Torre, Fred Jensen, Guillermo Perry, Mark Thomas, Antonio Velandia, and Joachim von Amsberg made useful comments to earlier drafts. The author acknowledges and thanks the staff from the central bank of Brazil and the Ministry of Finance, in particular Anderson Silva and Otavio Medeiros, for their patience and collaboration in explaining the intricacies of the Brazilian public debt. Finally, the author thanks Olivier Blanchard, Carlo Favero, Francesco Giavazzi, Alessandro Missale, and Charles Wyplosz for their comments and contributions to the original Bank project.

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INTRODUCTION

1. Throughout the 1990s, Brazil initiated a process of economic reform including liberalizing trade, relaxing price controls, and privatizing public enterprises. Although initially some problems remained, the country was able to correct most of these, including higher public sector deficits and limited exchange rate flexibility, and steer a course toward stability by the end of the millennium. However, the positive outlook deteriorated in 2001 –2002 because of several shocks: (i) the domestic energy shock in 2001 that led to the rationing of electricity consumption; (ii) the worldwide uncertainty and risk aversion arising from the corporate corruption scandals in developed markets and the September 11 terrorist attacks; (iii) the collapse of Argentina's economy that represented 11 percent of the exports of goods and the country's debt default that rocked emerging economies' sovereign bond spreads and currencies; (iv) the oil price shock resulting from the international political situation; (v) the economic slowdown in the United States and Europe; and (vi) the uncertainty surrounding the 2002 presidential election. As a result, domestic growth slowed down from 4.4 percent in 2000 to 1.5 percent in 2002, sovereign spreads rose from about 700 to 2,400 basis points, the currency depreciated from 2.4 to 4 reais per dollar, and the debt to GDP ratio worsened from 49.3 percent in 2000 to 57 percent at the end of 2002.

2. This paper analyzes why these shocks derailed the economy despite the significant progress in economic policymaking in the previous years. The report aims to draw lessons from Brazil's recent experience of going into a tail-spin despite having in place a good policymaking framework. The objective is to make this framework more robust so that it works well in both favorable scenarios and adverse circumstances.

3. The paper is organized in four sections following this introduction. The first one describes the main elements of the monetary and fiscal policy mix during 2001-2002 and interprets the observed outcomes mostly as a result of policy rigidity and the particular public debt composition prior to the crisis. Fiscal policy constraints emanated from both structural budget rigidities and short-term political factors. As the primary surplus remained stable while public debt ratios rose and the presidential candidates debated over the future stance of fiscal policy, concerns on the future value of public debt dominated investor sentiment. This fact precipitated a fall in the demand for government securities forcing the central bank to intervene in the market by: 1) printing money to redeem amortizations coming due; 2) providing support for government securities' prices by holding larger shares of government bonds in its own portfolio; and 3) facilitating the change in private agents' portfolios from long-term fixed-rate instruments to shorter maturity and indexed paper. Given the increased uncertainty on how the rising debt levels would be serviced without changes in the primary surplus, agents expected part of the adjustment to be through higher inflation, regardless of the central bank's targets or actions. In these circumstances, monetary policy constraints emanated mainly from the fiscal policy and public debt management problems.

4. The second section discusses public debt management, which may be geared to compensate structural budget rigidities, but may also amplify the negative effects of external shocks if the cost-risk trade-offs are not adequately balanced. Ideally, public debt composition would be such that, in response to a negative shock to the budget, debt service would decrease. However, the Brazilian structure of public debt, mostly indexed to the exchange rate or to short run interest rates, amplified the negative effects of the supply and international capital markets shocks. Prior to the crisis, debt managers were able to extend maturity of the debt, reducing roll-over risk, at the expense of increasing exchange rate risk and interest rate risk. By issuing exchange rate-linked and Selic-indexed debt, the public sector provided private agents hedging instruments against unexpected shocks in these variables, at the expense of rising debt levels when the risks materialized in 2002. This rise can be interpreted as the cost of attempting to reduce roll-over risk in a very uncertain environment. In this sense, indexation was used as a substitute for credibility, but with a high cost. As credibility is affirmed, debt managers will be able to choose the debt instruments balancing better the risks, especially of shocks to the exchange rate, so that the likelihood of debt stabilization is maximized. In this fashion, the debt management strategy may be consistent with other elements of the policymaking framework in minimizing uncertainty arising from expected future policy actions.

5. The third section discusses fiscal rules as commitment mechanisms for the government's future policy actions. Commitment is crucial because private agents' current decisions, such as holding public bonds or investing, depend on expectations of future government actions. This binding mechanism will keep expectations of fiscal actions within some ranges, and hence, ensure that inflationary expectations arising from fiscal scenarios are consistent with the central bank's targets. In this sense, fiscal rules are a necessary complement to any robust monetary management framework and predictable debt management strategy. Though Brazil already has a fiscal commitment mechanism that has worked well, namely, the Fiscal Responsibility Law, it may be improved to minimize the likelihood of situations such as those of 2002 resurfacing. This chapter proposes several avenues for potential improvement, focusing on the adoption of an explicit fiscal rule that targets a medium-term debt level and defines the primary balance as the instrument to achieve that objective, while allowing the operation of automatic stabilizers along the business cycle. The relative weights assigned to the debt stabilization or the cyclical components of the rule could change over time according to society's preferences. Practical implementation of this proposal would require attention to two factors: one, that during the initial stage, while credibility in the debt-targeting mechanism is established, higher priority be assigned to the debt stabilization argument; two, that any change allowing operation of automatic stabilizers be undertaken during the recovery phase of the business cycle to avoid lower primary balances in the initial implementation phase which may hamper credibility. The fourth and final section summarizes the main lessons and conclusions.

I. POLICY MIX: FISCAL POLICY ADUSTS TO MONETARY POLICY OR VICE VERSA?

6. Brazil has learned through hard experience that some combinations of fiscal, monetary, and public debt management policies are not sustainable. Sustainability of the policymaking framework hinges on its capacity to absorb shocks and the coordination of its different elements in changing environments. When one of the elements is constrained to react to a shock, the other has to be more responsive, and policymakers have to judge which restrictions are more binding. Policy rigidity is historically associated with crises in Brazil and the 2002 events may be interpreted as one more case. At that time, however, the inflexible tool was fiscal policy which had served well as an escape valve in previous crises episodes. This chapter describes the quest for a flexible framework in the first section, while the second one interprets the 2002 crisis mostly as a result of rigidity remaining in it.

A. THE NEED FOR FLEXIBILITY TO ENSURE CONSISTENCY OF THE POLICYMAKING FRAMEWORK

7. In 1994, Brazil adopted the Real Plan, which brought down high inflation and stabilized it at international levels. Unfortunately, Brazilian fiscal accounts weakened progressively. Inflation was not only a revenue source but was also a useful mechanism to control government expenditures in real terms during the high inflation era (Cardoso, 1998). This loss of flexibility, combined with a lack of decisive fiscal reform, implied rising public sector deficits. The excess spending relative to national income was financed in liquid international capital markets. As a result, both public and private debt increased.

8. The central bank sterilized these capital inflows through open market operations to avoid monetary expansion and maintain a pegged exchange rate. This response complicated the situation even more because it entailed rising central bank (domestic) indebtedness and climbing interest rates that increased the cost of servicing public debt. High interest rates combined with the pegged exchange rate attracted even more capital, worsening the state of affairs. The increased indebtedness, jointly with the rigid fiscal, monetary, and exchange rate policies, left the economy vulnerable and with no capacity to absorb shocks. When the Asian and Russian financial crises occurred in 1997-1998, Brazil was severely affected due to its sizeable external financing requirements. In January 1999, the central bank abandoned its crawling peg exchange rate regime in favor of a flexible rate and adopted an inflation-targeting framework for managing monetary policy.

9. Simultaneously, the country began to tackle its fiscal imbalance by launching the Fiscal Stability Program, which consisted not only in raising taxes to obtain primary surpluses, but also in designing a legal framework for fiscal policy management. The government set and met stringent targets for the primary fiscal surplus; the public sector primary surplus reached 3.3 percent of GDP in 1999, 3.5 percent in 2000, 3.7 percent in 2001, 4.1 percent in 2002, and 4.3 percent in 2003. The government also passed measures, including the state debt refinancing program and the landmark Law of Fiscal Responsibility, that brought about a robust sub-national fiscal adjustment. The adjustment process included a move towards greater transparency, as existing but previously unrecorded liabilities were recognized and public managers were made accountable for

their expenditure decisions. These measures reflected the national consensus on the need for fiscal discipline at all governmental levels.

10. Making the public budget more flexible and responsive to shocks will constitute the main challenge of Brazilian fiscal policy in the future. The capacity to change government savings is a crucial element to guarantee sustainability as external conditions evolve. However, in Brazil, this ability to control savings is extremely limited given the expenditure mandates and revenue-sharing and earmarking.[2]

11. This ability is central for stabilization purposes. The present-value borrowing constraint[3] that the government faces will always be met. For instance, if public debt goes up, the expected primary surplus should also rise to ensure that the larger obligations will be repaid. If that is not feasible, the budgetary restriction equation will be adjusted either through an increase of the price level or a reduction of debt service. The precise form of the adjustment process to equilibrium depends on the flexibility of fiscal policy and on the composition of public debt. If government expenditures and taxes are predetermined, some other variable such as prices or asset returns, has to adjust to obtain the balance. How much or how fast prices react will depend on the maturity structure of public debt and on the degree of indexation of public debt. This topic is discussed in the next section.

12. Fiscal policy flexibility is also necessary to exploit its advantage as a signaling tool. In a world of imperfect information, in which investors do not know the debt issuer's true commitment to meet its obligations, a committed sovereign must differentiate itself from other types of debtors to be able to issue new debt. The primary surplus is the most exogenous policy tool that a government has to signal its commitment to pay its future obligations. As debt increases, the primary balance should go up to signal investors that the government is willing to adjust in order to maintain its intertemporal budget.[4] As the country's indebtedness increases, so does the cost of debt, and hence the larger the incentive for the reliable government to adjust fiscal policy to signal its commitment. Evidence shows that the primary balance had a larger impact on the credit ratings and on the cost of financing as the debt ratio increased in the case of four European countries (Drudi and Prati, 2002) and in Brazil (Herrera, 2002).

13. The value of having a flexible fiscal policy in the context of external shocks can be seen in the contrasting experience of Argentina and Brazil in 1999-2001. Despite the similarity of the public indebtedness indicators in both countries, Argentina suffered a major crisis in 2001 while Brazil avoided it. Table 1 shows various indicators of the magnitude of the public debt burden and the fiscal stance in both countries. The primary

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[2] The Desvinculacao das Receitas da Uniao, or DRU is a mechanism that allows some flexibility by allowing the federal government to retain 20 percent of net revenues before applying the earmarking.

[3] This constraints sets the equality between the discounted expected government revenues and the future flow of government spending including servicincng the debt.

[4] Bohn (1998) claims that this property of fiscal policy, namely the positive reaction of the primary surplus to changes in debt levels, is a necessary condition for long run solvency, and hence proposes it as a statistical test for verifying compliance of intertemporal budget restrictions.

fiscal balance is the main indicator distinguishing both countries. Is it possible that this variable captures the essence of the difference between the two cases?

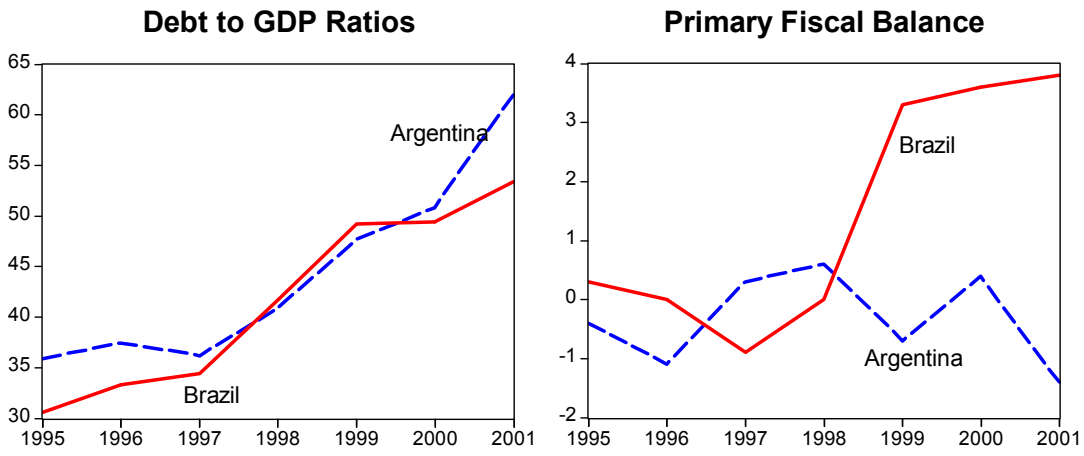
Table 1
Summary of Public Debt Indicators in Argentina and Brazil 2000-2001

	Argentina		Brazil	
	2000	2001	2000	2001
Public Debt (% of GDP)	50.0	62.0	49.6	53.3
Interest payments (% of GDP)	4.1	5.4	7.2	7.3
Interest/ tax revenue (%)	22.7	30.9	30.9	29.8
Interest/current revenue (%)	16.6	22.9	18.0	16.5
Overall fiscal balance (% of GDP)	-3.6	-6.8	-3.6	-3.6
Primary fiscal balance (% of GDP)	0.4	-1.4	3.6	3.8

Source: Source: World Bank staff calculations based on official data for Brazil, Bacen and for Argentina, Minsterio de Economia.

14. To answer this question, it is necessary to examine in retrospect the relationship between primary balances and debt levels in both countries. While primary balances were similar until 1998, they diverged from 1999 onwards as Figure 1 shows. When debt ratios increased in 1999, the primary balance registered a significant surplus signaling Brazil's commitment to adjustment. Statistical evidence supports the hypothesis that primary balances acted as signaling tools in Brazil (Herrera, 2002) and in other European countries that successfully overcame credibility problems (Drudi and Prati, 2000) unlike in Argentina's case.

Figure 1
Primary Balances and Debt Ratios in Argentina and Brazil 1995 – 2001
(% of GDP)

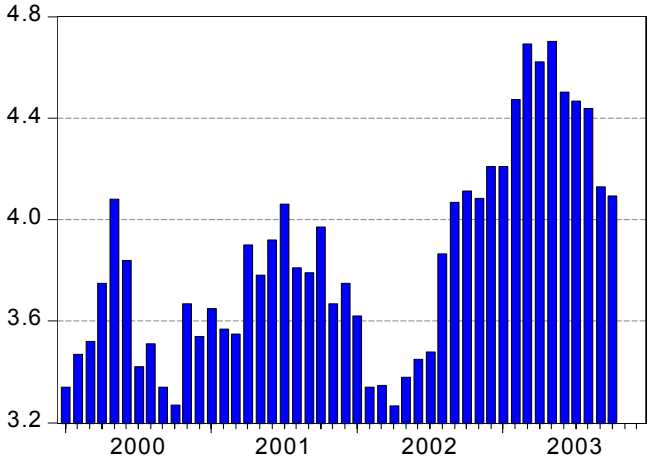


Source: Herrera (2002)

B. POLICY RIGIDITY AND THE 2002 CRISIS

15. In sharp contrast with the 1998-1999 adjustment, Brazil's fiscal policy did not react to the shocks in early 2002. This policy rigidity compounded uncertainty arising from other sources and led to asset price changes that complicated the situation even more. The government's commitment to maintain a constant primary surplus seemed to falter as the primary balance declined during the first semester (Figure 2) amidst a heated political debate on the stance of future fiscal policy.

Figure 2
Primary Fiscal Balance of the Public Sector 2000-2003
(as a percentage of GDP)



Source: Bacen, Boletin Estadistico, several issues

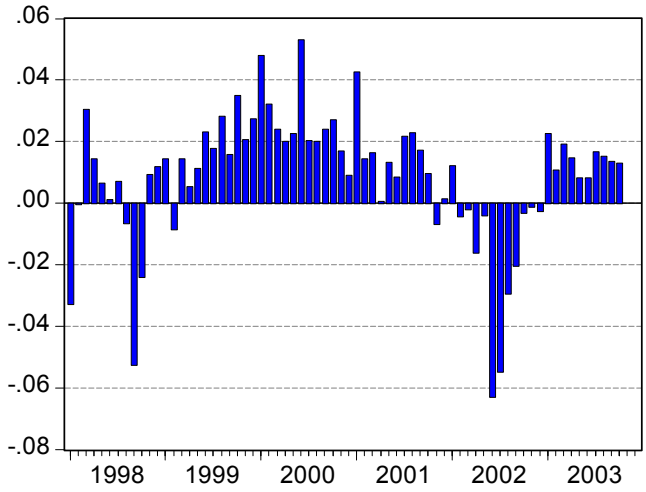
16. The rigidity of fiscal policy may have been at the root of the 2002 crisis. Inflexibility was the result of both structural factors and transitory circumstances. The structural inflexibility of the budget exists in both expenditures and revenues: on the expenditure side, rigidity arises from constitutional mandates and entitlements, while on the income side, it emanates from revenue sharing with the states and earmarking. More than 70 percent of primary expenditure is composed of social security benefits and wages (Velloso, 2002), while more than 80 percent of federal government revenues are earmarked or subject to revenue sharing (Ministerio de Planejamiento, 2003). This legacy severely limited the options of fiscal adjustment to cutting capital expenditures or raising revenues, both of which have limits. International experience shows that successful fiscal adjustments, that is, those that are permanent, rely more on current expenditure cuts than on revenue hikes or capital spending reduction (Alesina and Peroti, 1996). Given that, by 2001, the primary surplus had already reached 3.8 percent of GDP, with capital expenditures dropping to historically low levels and public sector revenues reaching extraordinarily high echelons, it was difficult to increase public savings without compromising the quality of the adjustment.

17. Fiscal policy rigidity was also due to the short-term effect of the October presidential elections. The government's coalition had weakened because of internal disputes in anticipation of the presidential election Additionally, corruption allegations in

congress led to the impeachment of its president, a strong supporter of the government's economic policy. In this context, crucial reforms with fiscal impact, namely the public servants social security and tax reforms, were left pending. Other reforms, such as the extension of the financial transactions tax, or CPMF, stalled. With the political campaign heating up in the first quarter, it was practically impossible to get support for any adjustment. Additionally, any change would have been interpreted as transitory given that a new government would take office in the near future.

18. Uncertainty regarding the future government's commitment to fiscal adjustment (irrespective of who won the election) generated concerns about the future value or liquidity of public debt. Given the concentration of public debt holdings in mutual funds (to be discussed in the next section), a significant resource outflow affected them in the period April-October. In its peak, the run represented more than 6 percent of the intermediaries' net worth (Figure 3).

Figure 3
Net Resource Flow to Mutual Funds
(as a fraction of net worth)



19. The sell-off of government securities caused a fall in their price (rising spreads), which in turn pressured the exchange rate to depreciate (Figure 4). The rising spreads and the exchange rate depreciation were also associated with capital outflows from Brazil. As Figure 5 shows, in September and October, capital outflows reached a peak of almost 20 percent of international reserves of the central bank.[5] During these months the exchange rate also reached a peak of 4 reais per dollar. Consequently, the debt level rose due to its indexing to the exchange rate. This fact aggravated concerns on debt

[5] Capital flows exclude foreign direct investment and IMF resources.

sustainability which exerted further downward pressure on the demand for Brazilian sovereign bonds and pushed their prices even lower in a vicious circle.

Figure 4
Brazilian Spreads and Exchange Rate
Jan 2000 – April 2003

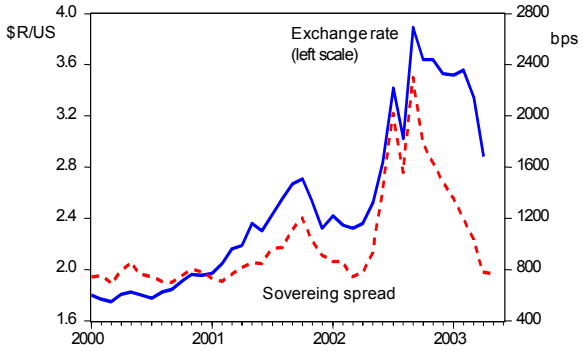
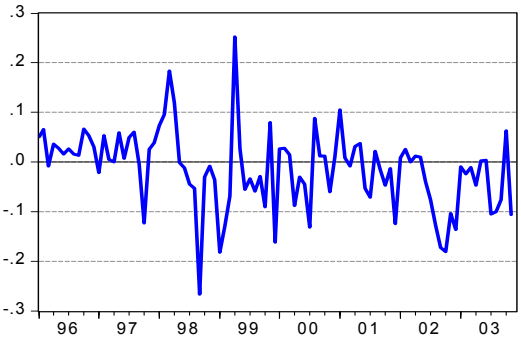


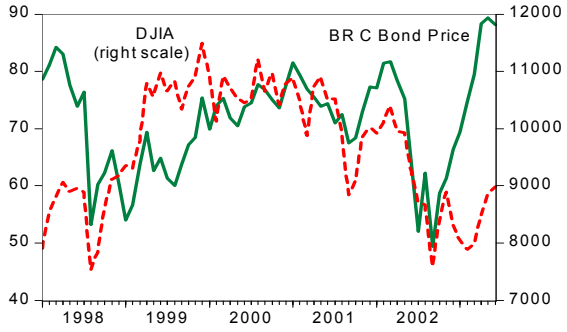
Figure 5
Capital Flows to Brazil
(ratio to international reserves



Source: Bacen and JP Morgan

20. The fall of Brazilian government securities' prices and capital outflows also occurred because of a global phenomenon: the rise in uncertainty and risk aversion due to the growth slowdown of the industrialized nations, the terrorist attacks in the United States, and the corporate corruption scandals of the more mature capital markets around the world. This fact exerted additional downward pressure on Brazilian government paper, and made those prices move in tandem with asset prices worldwide (Figure 6). Favero and Giavazzi (2003) show how Brazilian spreads depend both on domestic factors, in particular the stance of fiscal policy, and on global conditions. The relationship between external factors and Brazilian sovereign spreads is non-linear: when domestic fundamentals are sound, this relationship is not as clear, but when fiscal fundamentals are weak, the effect of global factors is amplified.

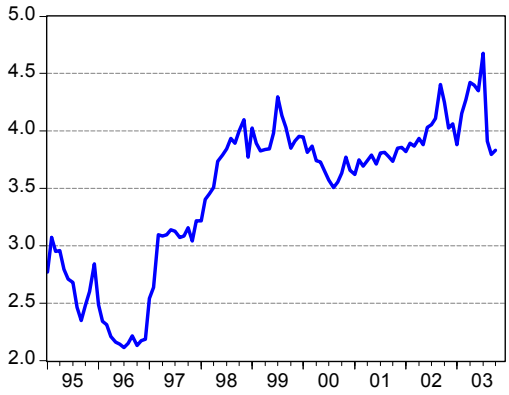
Figure 6
Co-movement of Brazil C Bond Prices and the Dow Jones Index
Evidence of Global Factors' Influence on Brazilian Asset Prices



Source: World Bank staff calculations

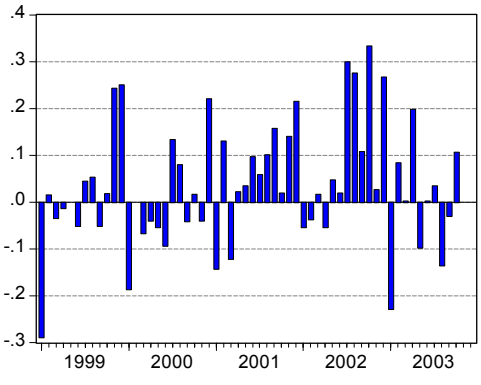
21. Faced with mounting difficulties in rolling over the domestic debt, the central bank redeemed a fraction of debt falling due by printing money. Consequently, the monetary base expansion exceeded nominal GDP growth (Figure 7). The monetary effect of public domestic debt redemptions during the second semester of 2002 reached the tenor of 30 percent of base money (Figure 8). It is crucial to point out, however, that the positive monetary expansion due to the treasury's operation began in the second semester of 2001 and could have been interpreted as a leading indicator of the more turbulent episodes that were to unravel in mid 2002.

Figure 7
Money Base as a Share of GDP
(seasonally adjusted data



Source: World Bank staff calculations based on Bacen data

Figure 8
Monetary Impact of Treasury's Operations 1999- 2003
(ratio to the monetary base

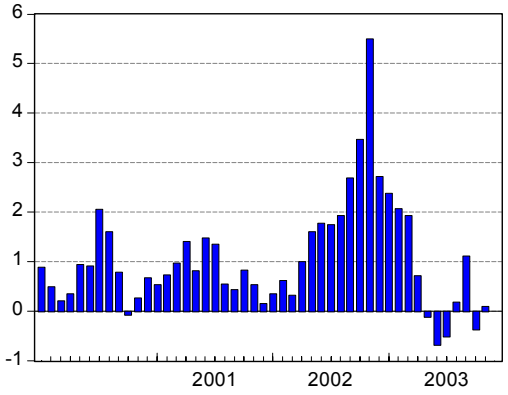


Source: World Bank calculations based on Bacen data

22. Moreover, base money grew in lockstep with the faster depreciation of the currency. This pressured inflation, which accelerated between June and December, reaching a peak of 5.8 percent per month in November (Figure 9). Monetary growth and rising inflation increased the government's revenue from money creation up to the

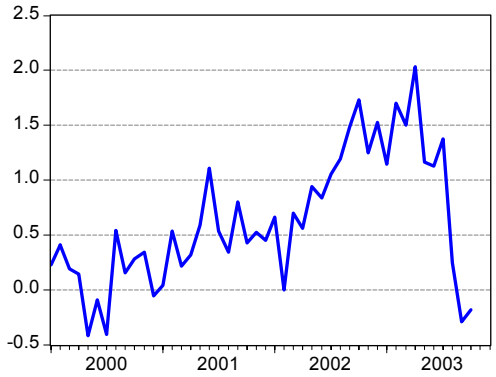
equivalent of 2.0 percent of GDP[6] (Figure 10). In these circumstances, the credibility of the public on the authorities' ability to control inflation faltered. It is interesting to note that the seignorage peak occurred in the first quarter of 2003, a few months after the public debt ratio had stabilized and the exchange rate had appreciated. This implies that interest rates could not be lowered as quickly as many would have desired.

Figure 9
Monthly Inflation Rate in Brazil 2000-2003
(seasonally adjusted General Price Level IGP-DI)



Source: FGV

Figure 10
Seignorage from Money Creation 2000-2003
(% of GDP)



Source: World Bank calculations described in text.

23. The monetary authorities reacted variously to the shocks during the 2001-2002 period. In the initial stage, from March 2001 to July 2001, the central bank raised the Selic rate from 15.25 percent to 19 percent.. From then on, it maintained the Selic at 19 percent, until February 2002, when it reduced it 25 bps, then lowered it again in March and July. In mid-October 2002, the central bank bumped up the Selic three percentage points to 21 percent and then raised it two more times until reaching 25 percent before the year's end (Figure 11). As the Selic rose, the exchange rate partially reversed its depreciating trend, and the debt stock (as a percent of GDP) began decreasing. Looking (ex-post) at this behavior, it is legitimate to wonder why the central bank did not raise interest rates before October. Interestingly, it also raises the question of the applicability of Blanchard's model to the Brazilian experience, since that paper presents the case for the *potential* destabilizing role of monetary policy when interest rates are increased, but the crisis occurred in the context of stable policy interest rates.

24. Several factors might explain the central bank's delayed reaction and some are related to considerations described by Blanchard's model. The first reason is that, before September-October, the fiscal conditions were inadequate. Public debt to GDP increased from 49 percent to 53 percent in 2001, and climbed further to 57 percent by mid-2002 without any policy response. With the primary balance decreasing during the first semester of 2002, it is understandable that sustainability concerns dominated investor

[6] The figures reported in the text and in the graph are estimated by multiplying the base money as a share of GDP times the growth rate on base money. Eliana Cardoso (1998) estimates the average inflation tax revenue in Brazil during the 50 years ending 1995 at 2 percent of GDP.

sentiment.[7] With taxes and expenditures predetermined by the electoral process and the structural rigidity of the budget, the adjustment of the government's real cash flow could come through several avenues: an increase in the price level, a higher seignorage, or a default The nature of the fiscal regime could have switched from one in which the primary surplus would de adjusted with certainty to ensure debt sustainability to one where there was uncertainty on how the adjustment would take place. A-priori it was difficult to envision how the adjustment would take place, and the composition of public debt, which we discuss in the following section, determined the final outcome.

25. The crucial point to bear in mind is that, under the circumstances of rising debt levels with an unresponsive fiscal policy, raising the Selic could have been inflationary.[8] The higher cost of debt service (with an unresponsive primary surplus) would have led to a higher probability of default. This, in turn, would have accelerated capital outflows, increasing pressure on the currency to depreciate and hence, on inflation. Since printing money and higher prices were part of the solution to the imbalance in the government's present-value borrowing constraint, fiscal expectations were inconsistent with a stable price level. In fact, since September 2001 inflation expectations were permanently above the central bank's central target and by mid-2002 market expectations of inflation were regularly above the forecasts of the more robust models (Minella, et.al. 2003). Additionally, there is evidence of changes in the price formation mechanism in Brazil at the end of 2002 that researchers attribute to changes in the exchange rate pass-through (Belaisch, 2003). However, these changes in the observed price formation and inflation expectations generating mechanisms could have also been the result of the changes in fiscal expectations arising from a different fiscal regime during this brief period.

26. Empirical verification of the nature of the prevailing fiscal policy regime in a particular period poses challenges both from the conceptual and practical viewpoints. At the conceptual level, verification of the nature of the fiscal regime would require testing whether the primary surplus would have been the same if another price sequence would have been observed.[9] Unfortunately, history only shows the actual (one) realization of the price level and hence it is impossible to verify whether the surplus would have been the same with a different price sequence (Woodford, 2001; Kocherlakota et al., 1999).

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[7] This is what Blanchard calls the "wrong" fiscal conditions. Woodford (2001) call this a non-Ricardian environment. A Ricardian environment is one in which expected future primary surpluses adjust to compensate variations in the present value of debt, while in non-Ricardian regimes this policy adjustment certainty is non-existent.

[8] Woodford (2001) shows how the price level may be determined by fiscal variables. The government's inability to balance its budget constraint via adjustments in the primary surplus, implies that the price level is the adjustment mechanism. Hence, the budget constraint acts as an equilibrium condition wich determines a unique price level associated with the particular fiscal policy. Previous episodes of Brazilian inflation in the 1970's and 1980s have been explained based on these grounds (Loyo, 1999). The Favero_Givazzi and Blanchard papers in this volume extend this theory to allow the price of debt (or the sovereign risk premium) to be the adjusting factor.

[9] In a controlled experiment situation, if another price (of goods or of sovereign debt) sequence could be associated with the same fiscal policy, then the hypothesis could be falsified. However, in reality we only observe the actual price sequence and, hence, cannot tell whether the fiscal policy would have been the same under a different price sequence.

27. At the more practical level, verification of the character of the fiscal regime focuses on testing the responsiveness of the primary balance to changes in different variables (Bohn, 1998). These tests perform regressions of the primary surplus on the public debt ratio and other control variables to verify the significance of this particular coefficient. A positive (and significant) response of the primary surplus to changes in the debt ratio implies that this policy variable was the adjustment factor. In Brazil, the brevity of the period during which this regime change might have occurred limits any statistical testing. There are, however, studies that test this hypothesis using longer sample periods, with results extremely sensitive to the period of analysis. For instance, two papers in this volume report contradictory evidence: Favero and Giavazzi show that the primary surplus is highly persistent and unresponsive to any oscillation in the debt level; Wyplosz concludes that the observed surplus was similar to the one that would have resulted if the government had followed a rule that tried to stabilize the debt ratio while allowing some counter-cyclical action. It is very likely that this divergence corresponds to the different sample periods: while the first study estimates the relationship after July 1999, the second one begins in 1998. Since there is a regime shift in fiscal policy in 1998-1999 described elsewhere (World Bank, 2000) and verified econometrically (Herrera, 2002), the Favero-Giavazzi paper does not capture this change.

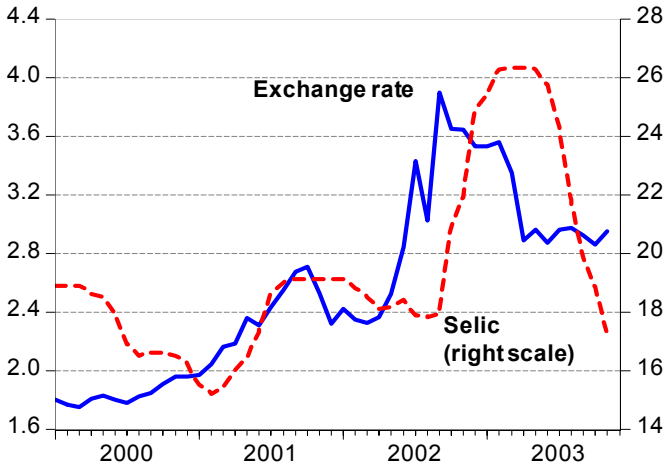
28. The second explanatory factor for the central bank's resistance to raise the policy rate was the vulnerable situation of mutual funds. Given the run on mutual fund deposits, raising the Selic would have been extremely risky because of the potential to aggravate losses to these intermediaries. As described in the next section, mutual funds were registering losses due to updating their balance sheets with new mark-to –market regulation from the central bank Raising the Selic would have increased the risk of a generalized run on the system. Additionally, in the face of a decreased demand of public bonds, to be described in the next section, the central bank was supporting the price of these assets. Under this extraordinary circumstances imposed by the public bond price support role, equivalent to an interest rate peg, liquidity was endogenous, and hence it would have been contradictory to try to control liquidity (by raising the Selic).[10] Given that monetary policy was unable to respond, it would have been desirable that fiscal policy had been more responsive to the shocks.

29. By October 2002, the characterization of the economy had changed in several respects: (1) the run on mutual funds had been contained; (2) the presidential candidates had already agreed on sound fiscal policy principles; (3) the primary surplus reversed its decreasing trend and rose to unsurpassed levels. Clearly, the factors that originated the "wrong" expectations were not present any more. The central bank was then free to raise interest rates and quickly moved in this direction, bringing about the expected traditional results of the currency appreciating in response to tighter monetary policy as described

[10] The Brazilian circumstances of a fixed primary surplus, and a central bank acting to support the price of public bonds (peging the interest rate) fit perfectly Woodford's characterization of the typical non-Ricardian regime (Woodford, 1998, 2001), with the implication of the effect of fiscal expectations on the price level.

in Figure 11. Control of the economy was gradually regained and consolidated after the first quarter of 2003.

Figure 11
Short term policy interest rate (Selic) and exchange rate in Brazil 2000 – 2003



Source: Bacen

30. The run on mutual funds investments highlights two critical issues for monetary and financial policies: first, the importance of having balance sheets that adequately reflect the value of intermediaries' assets and, hence. mark-to-market regulation; second, the relevance of monitoring the risk positions of intermediaries that invest in long term government paper funded with liquid deposits. Had government securities been registered at their market value rather than their face value, part of the herd behavior could have been avoided. Hence the need to move in that direction was desirable. However, the transition from one accounting system to another should be done during tranquil times, not during crisis episodes. Liquidity risk originated in the transformation of liquid deposits into long-term government securities was not monitored accurately and ended up in the central bank market intervention described below. Additionally, the improper disclosure of information does not allow the end-investor to properly assess risk and hence is not conducive to the creation of a diversified public debt holder base, an important element in risk management of the public debt.

II. PUBLIC DEBT MANAGEMENT: INSTRUMENTS THAT FACILITATE DEBT STABILIZATION

31. Public debt management may be geared to compensate structural budget rigidities, but may also amplify the negative effects of external shocks if the cost-risk trade-offs are not adequately balanced. Ideally, public debt composition would be such that, in response to a negative shock to the budget, debt service would decrease. However, the Brazilian structure of public debt, short- run and indexed to the exchange rate or to interest rates, amplified the negative effects of the supply and international capital markets shocks. Another feature of Brazilian debt is the concentration of debt

holders in banks and mutual funds. These features are a legacy of volatility, uncertainty, and institutional factors that amalgamated public debt management, monetary and exchange rate policies during many years. These are examined in the fist section while the second one describes the policy responses in the context of no degrees of freedom.

A. Features of the Brazilian Public Debt

32. Brazilian public debt has four features that are critical to understand the market's reaction and the policy responses to the 2001-2002 shocks: first, public debt is mostly domestic, with the ratio of domestic to external debt at 4:1; second, it has short maturity and duration; third, it is strongly biased towards indexed debt, both to short term interest rates and the exchange rate; and fourth, it is held mostly by financial intermediaries, in particular, mutual funds. These four features interacted inducing significant vulnerability of the economy and shaped the policy responses to the shocks. In what follows we discuss the interaction of these features and describe the policy responses.

33. The first feature, namely that Brazilian debt is mostly domestic, and payable in local currency, facilitated adjustment. The fact that most of the debt was payable in Reais, which are nothing more than a more liquid type of government liability, made the default option less likely. The central bank had the option of printing money to amortize debt, which it did. In a sense, there was no doubt that the government had the ability to deliver the Reais it had promised. On the other hand, the fact that the debt was payable in local currency led to fiscal expectations that were not consistent with a stable price level: more local currency led to more depreciated exchange rates and higher inflation.

34. The second particular feature of Brazilian debt, its short maturity, implied roll-over risk was at the forefront of the debt manager's problem The short duration also implied that, if inflation was the chosen equilibrating factor of the government's real budget cash flow then it would have to be substantial because longer term securities are more sensitive to inflation changes. Since the Russian crisis of 1998-1999 until 2001, authorities succeeded in reducing rollover risk. The average maturity of (auctioned) debt rose steeply from about 8 months in 1998 to about 30 months by September 2001. Similarly, the proportion of debt falling due in the next 12 months decreased from 53 percent at end-1999 to 26 percent at end-2001

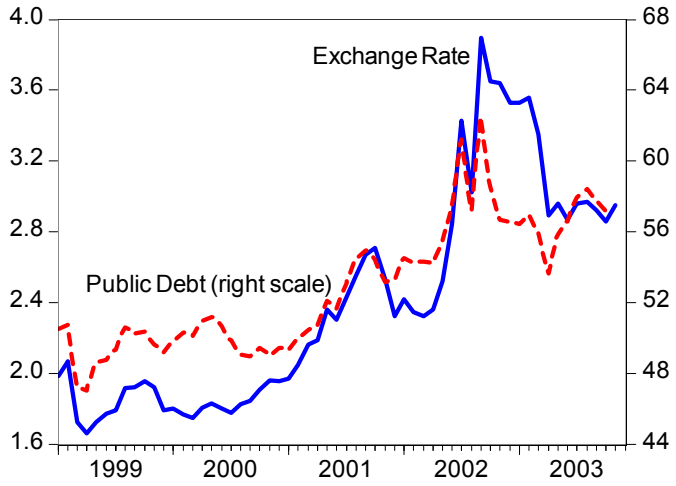
35. This reduction in roll-over risk from 1999 to 2001 was achieved at the expense of increasing market risk, and in particular, exchange rate risk. In times of volatility, private agents demand instruments to hedge their market risk (exchange rate and interest rate), and the government provided the vehicles by issuing dollar-indexed debt and Selic-indexed debt. This, in part, explains why the Real crisis of 1999 did not affect the private sector and in particular the banking sector. In 2001, history seemed to repeat itself as the issuance of dollar-linked debt increased. Hence, in the recent crises the private sector was well hedged against shocks to interest rates and exchange rates, which might explain why there were no severe output contractions nor banking crises. However, this happened at the expense of rising public debt.. As will be seen below, the gains in rollover risk reduction were reversed during the 2002 crisis.

36. The short maturity of public debt implies that both the Treasury and the central bank operate on the same end of the yield curve. This requires a skillful coordination of monetary policy and public debt management. Debt managers tend to shorten maturity during turbulent times, which is a natural thing to do as the term spreads skyrocket. As the public debt shortens its maturity, it becomes, in the limit, a substitute for narrow money. In principle, the Central Bank could redeem the whole stock of public debt and absorb any excess liquidity via repo interventions. Hence, in theory, there could be an equilibrium situation without credit risk and with debt rolled over on a daily basis

37. However, the stability of this equilibrium depends on the government's credibility and agent's willingness to hold the public securities the following day. As maturity shortens, the possibility of a self-fulfilling debt run, analogous to a self-fulfilling bank run, increases. In these models, if investors today believe that tomorrow investors will not want to hold public debt, they will anticipate a raise in interest rates on government paper which will imply larger future borrowing requirements which may lead to future illiquidity (depending on the size of the debt), which in turn leads to a collapse on the demand for public debt today. Several theoretical models show that credit risk increases as the maturity of the debt shortens (Alessina, Prati and Tabellini, 1990; Drudi and Giordano, 2000).

38. The third feature of Brazilian debt, indexation to the exchange rate or to the Selic, implied a significant loss of control of the debt ratio level (Figure 12) given that these variables are not under control of fiscal authorities.. The gains that were achieved in reducing the degree of debt indexation as the economy stabilized from 1999 to early 2001 were committed throughout 2001, when the Argentinean crisis started to unravel. To fight what authorities diagnosed as a speculative attack against the Real, the central bank adopted pre-announced daily sale of international reserves and, to mitigate the currency depreciation effect of the external shock, the government issued dollar-linked debt. Between May and October of 2001 the dollar linked public bonds circulating outside the central bank increased by US$14 billion, or the equivalent of 40 percent of the average international reserves level.

Figure 12
Public Debt Evolution during the Floating Exchange Rate Regime



Source: Bacen

39. These bonds had a fixed coupon and were sold **at a discount**, which would be crucial in the months to come. Given the high demand of the private sector for instruments that allowed hedging the exchange rate risk, average maturity of these bonds was doubled, form 9 months in 2000 to 18 months by end-2001. From the debt manager's viewpoint, rollover risk was reduced (though at the expense of higher exchange rate risk.) From the monetary authorities perspective, the currency was not abandoned to a speculative attack due to Argentina's crisis. By the year's end, with an exchange rate at 2.32 after having reached a low of 2.80 Reais per dollar, many considered this episode an example of a successful intervention to puncture a speculative bubble and simultaneously the roll-over risk was reduced due to the lengthening of the maturity of the dollar-linked bonds.

40. However, in 2002 the negative external shock originated by Argentina's collapse was compounded by the corporate corruption scandals in Wall Street that increased risk aversion of international investors. These external shocks were compounded by two domestic factors: a) the uncertainty of the future stance of fiscal policy that was one of the hottest issues in the early stages of the electoral campaign; b) the acceleration of the implementation of daily mark-to-market portfolios of mutual funds to end- May. Mutual funds carried public bonds on an accrual basis up until redemption, and originally had until September to adjust to the new methodology. To avoid registering the losses between the market value and face value, mutual funds began unloading their holdings of government paper. In addition, uncertainty about the future stance of fiscal policy and the government's commitment to maintain the primary fiscal surplus, reduced the demand for long term government bonds, which precipitated further falls in their price. As some funds started to register losses and their net asset value decreased, massive deposit withdrawals took place, as described in the first section.

41. The fourth feature of Brazilian debt that shaped the outcome when the shocks hit the economy, was the concentration of public debt holdings in mutual funds. The holders of public debt are mostly financial intermediaries, and among these, holdings are concentrated in a few agents (Table 2).[11] This concentration is undesirable because it amplifies rollover risk, as participating agents belong to the same sector and are affected by the same shocks. Additionally, financial intermediaries have a bargaining power derived from the potential for transmission of shocks to rest of the economy, which may lead them to assume greater risks and then demand special rescue operations in times of trouble.[12] One fact that explains why financial intermediaries hold public bonds is that the central bank allows computing government securities as reserve requirement holdings. In December 2001, 39 percent of total reserve requirements were held in the form of securities.

Table 2
Holders of Domestic Public Debt

Type of Agent	% of total
Mutual funds	32.3
Brazilian Banks	30.4
Reserve Requirements	18.5
Corporates	7.0
Foreign banks in Brazil	4.7
Others	2.9
Households	1.0
Brokerage Houses	1.3

Source: STN, August 2002, Relatorio do Mercado

B. POLICY REACTIONS TO THE CRISIS WITH NO DEGREES OF FREEDOM

42. To mitigate the risk that the run on mutual funds' deposits spread to the whole system, the central bank intervened buffering the contraction in market demand for public debt and facilitating its roll-over. To do so, the Central Bank increased its own holdings of public debt, and allowed a recomposition of private sector debt portfolios towards shorter maturity and away from fixed rate instruments. While the central bank held in its portfolio about 15 percent of total public bonds issued in 1999, that ratio increased to almost 30 percent by end 2002. This proportion is significantly higher in fixed rate instruments, where the central bank held over 60 percent of the total bonds issued in December.

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[11] Three banks and 7 mutual funds hold well over 50 percent of the government debt (Fratzscher and Del Valle, 2002). Concentration is not peculiar to the Brazilian market. Other more mature markets, such as the U.S. are concentrated, at least in operations with some types of instruments: the top quintile of primary dealers concentrates over 80 percent of total transactions in inflation-indexed securities (Sack and Elsasser, 2002).

[12] Two other reasons why the concentration of public debt holdings can be harmful: a) it may give market power to the buyers that may collude to set prices. b) bond holding concentration could imply a regressive expenditure structure, given that interest payments on domestic debt constitute wealth redistribution from taxpayers to domestic bondholders if both group of agents are not the same.

43. Simultaneously, the central bank used its large holdings of government securities to conduct debt exchanges, shortening the maturity of public debt held by the market. Between August and October, approximately 52 percent of the outstanding Selic-indexed debt was swapped for shorter term Selic-indexed debt.[13] As a consequence, the average maturity of selic-indexed debt held by the market fell from 36 months in March 2002 to 20 months in January 2003 and the percentage of debt coming due in the following 12 months rose from 6 percent to over 50 percent in the same period. As a result of the crisis, the public debt changed composition, ending up with less fixed rate debt and shorter maturities.

44. Exchange rate risk exposure during the 2002 crisis remained relatively stable, and even decreased. In May 2002, the central bank began issuing swaps seeking to relieve some pressure off the exchange rate without increasing the stock of public debt. The Treasury simultaneously reduced the issuance of dollar-linked debt, but unfortunately net treasury dollar-linked debt did not decrease quickly enough to compensate the higher cost of depreciation. Hence, as the currency depreciated the share of dollar-linked debt (including central bank swaps) rose from 29 percent to 41 percent between March and September. However, in dollar terms, total exposure to exchange rate risk reached a peak in December 2001 and remained at that level until May when it began falling (Table 3). The rise in the proportion of the dollar-linked debt reflects the higher value (cost) in Reais of portfolio composition chosen in the past, in particular during 2001 to alleviate pressure on the exchange rate. The reduction in the exposure to exchange rate risk is crucial to obtain more control of the public debt level. A clearer definition of the monetary and debt management functions would contribute to have a unified and steady debt management strategy that would reduce uncertainty about future funding plans for the overall public sector.

45. To a great extent, debt managers were forced to intervene in the market to support the price of government securities because of the illiquid nature of the secondary markets for delivery. In contrast, the repo or the derivatives markets of government securities are very liquid. However, repo markets can only provide transitory liquidity and hence, cannot be a permanent liquidity source for government securities holders. Therefore, they cannot reduce liquidity risks for bondholders that wish access to cash. In periods of excess volatility, as the 2002 experience demonstrates, debt managers will feel compelled to absorb part of the risk given the absence of proper functioning adjustment mechanisms. Additionally, without secondary markets for delivery of government securities, extending maturity to reduce rollover-risk will be extremely difficult and more costly.[14]

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[13] STN website www.stn.gov.br Leiloes de Permuta

[14] The derivatives and repo markets have drained much of the liquidity from the cash markets (and from secondary markets for delivery), because these transactions are not subject to reserve requirements or the debit tax (CPMF). Additionally, repos, futures and swaps until very recently were not considered fixed income securities, and as such were subject to quarterly income or capital gains taxes as opposed to monthly in the case of a cash fixed income instruments. All these considerations discourage securities trading in the cash market and hence inhibit the development of a secondary market for government debt.

46. Over time, debt managers will have to rebalance the relative weights of financial cost vs. longer maturities, and accept the higher cost of issuing longer maturities to reduce roll-over risk. In taking steps to lengthen duration and reduce the indexation of debt to foreign currency, the authorities will face some difficult choices. As progress continues on fiscal consolidation and debt ratios fall, it should be possible to replace indexed debt with fixed-rate, domestic currency debt with equal or longer maturities. This should be done in a way that would not significantly erode the average life of outstanding debt. The authorities' ability to issue such debt will be limited by the degree of market acceptance of longer maturity fixed-rate debt and the steepness of the yield curve, which in part is caused by a lack of liquidity in longer-term fixed rate issues owing to the lack of issuance of these securities over the past few years. Models such as those developed by Missale and Giavazzi (2003) are useful for debt managers to quantify these tradeoffs .

Table 3
Exposure of Brazilian Public Debt to Exchange Rate Risk 2000- 2003

	Treasury Dollar linked debt (R $ bi.) (1)	Central bank swaps (R $ bi.) (2)	Total exchange rate exposure (R $ bi.) (3)	Percentage of domestic debt (in %) (4)	Exchange rate (Reais/US$) (5)	Total exposure in dollar terms (US$ bi) (6)
December 00	114	-	114	22	2.0	58
December 01	179	-	179	29	2.3	77
March 02	179	-	179	29	2.3	77
May 2002	179	14	193	30	2.5	77
September 02	191	77	268	41	3.9	69
December 02	139	91	230	37	3.5	65
November 03	82	92	174	24	3.0	59

(1), (2), (3) , (4) Source; Relatorios da Divida Publica
(5) Average exchange rate for the month
(6)=(3)/(5)

III. FISCAL RULES: POLICY ELIMINATED AS SOURCE OF INSTABILITY

47. The Brazilian experience of 2001-2003 shows that the coordination between fiscal and monetary policies is necessary to stabilize the economy. When monetary policy is not able to react to a given shock, then fiscal policy has to be more responsive. There may be circumstances when fiscal events, or expectations of them, are determinants of price changes or of interest rates, and these expectations might not be consistent with the central bank's objectives. Functional independence of the central bank, meaning its ability to guarantee that its actions will influence inflation expectations and keep them within certain bounds to meet an inflation target, can only exist if fiscal expectations are not inconsistent with price stability. Hence, functional independence of the central bank is a necessary complement of legislative independence which isolates monetary policy form political interference.

48. Fiscal policy could contribute to growth and mitigate debt sustainability concerns through at least three channels: First, by choosing a particular composition of public expenditures, the government implicitly may determine a specific growth pattern that affects its debt servicing capacity. For instance, Brazil has a composition and level of

public expenditure that deviate substantially from the Latin American benchmark and affects long term growth (Rioja and Glomm, 2003).[15] Second, by minimizing the burden of taxation, subject to revenue collection requirements, the government can alter growth prospects. A recent study (DRI-WEFA, 2002) shows that by reducing tax rates by 20 percent, the yearly steady state growth rate can be increased by almost 0.5 percent. Research and empirical quantification of the welfare impact of different types of taxation in Brazil is in its infant stage, but there are promising results (Suescun, 2003). Third, by reducing uncertainty about the sustainability of the economic policy framework, which is achieved through the adequate coordination with other economic policy tools. The present report concentrates on this stabilization aspect of fiscal policy.

49. The adoption of a commitment mechanism for fiscal policy would contribute to rule out the possibility that fiscal policy and expectations derived from the fiscal framework play a destabilizing role (Woodford, 2001; Canzoneri, Cumby and Diba,2002). The ability to commit is important in this case because anticipations of future government actions influence the current decisions of private individuals. For instance, anticipations of future taxation affect current private investment, or expectations of future debt servicing capacity influence current bond holding decisions. By committing, the government can achieve better policy outcomes, as economists have learned from the literature on rules versus discretion over the past 25 years[16] (Stokey, 2002). There are alternative institutional arrangements that would allow a government to commit fiscal policy, such as fiscal responsibility laws, fiscal rules, or delegation of fiscal decision making to supranational authorities or advisory committees of experts. Brazil has successfully advanced with the fiscal responsibility law option, though it is not a generalized experience throughout the region (Webb, 2004). This chapter briefly describes the Brazilian fiscal commitment mechanism and suggests possible avenues for its further development.

A. THE BRAZILIAN FISCAL COMMITMENT MECHANISM: THE LAW OF FISCAL RESPONSIBILITY

50. The Brazilian success with this commitment mechanism owes to a combination of factors. The crucial ones being the inclusion of all government levels (federal and sub-national), the incorporation of enforcement mechanisms, and the design of transition paths for those states or municipalities that initially did not meet the benchmarks. These principles should be applicable to any institutional arrangement that seeks to commit credibly future fiscal policy decisions. The three factors are related and this section describes this interaction, especially between the first two.

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[15] Rioja and Glomm (2003) show how Brazil public expenditure is not only higher than the rest of the Latin American countries, but also biased towards transfer payments.

[16] The "bad" outcomes may arise from several sources. One is the time inconsistency problem, according to which even a benevolent Ramsey-type government has incentive to deviate from a planned policy, and that deviation will result in everybody's benefit. However, agents anticipate that government behavior, making the original government plan incredible. Another source of "bad" outcomes, or deviations from optimal policy plans, arises from the action of interest groups that derail the government's original plan. As agents anticipate this outcome, policies loose credibility resulting in sub-optimal outcomes.

51. The history of the federal-sub-national relationship in fiscal matters shows that, until 1997, the story was complex and not always positive (Ter Minassian, 1997). The complex structure of fiscal federalism determined the lack of fiscal co-responsibility and the absence of hard budget constraints by lower government levels. There was no control of sub national indebtedness, and the federal government bailed out states and municipalities on several occasions. In less than ten years, the federal government restructured sub national debt three times: In 1989, the federal government assumed part of the states' external debt, which totaled 2 percent of GDP; in 1993, the federal government refinanced the state and municipal debt with federal financial agencies, an amount equivalent to 7.2 percent of GDP; finally, in 1997, the federal government restructured the states' bonded debt, an operation amounting to 11.5 percent of GDP.

52. Unlike the previous two refinancing operations, the 1997 bail-out was conditioned upon the state's compliance with fiscal adjustment and structural reform programs. In exchange for the rescue package, the federal government negotiated agreements with 25 states in 1997 and 1998.17 Sanctioned by Lei (Law) 9496 of September 1997, these agreements included: (i) constraints on borrowing, loan guarantees, debt service and amortization, primary deficits and personnel expenditures; (ii) a requirement that states privatize their public banks; and (iii) a requirement that states launch reform programs using the proceeds from the privatization of other assets. (iv) the collateralization of resources to ensure debt service and the corresponding authorization to the federal government to withhold transfers mandated by the Constitution,

53. In 1999, Senate Resolution No. 78 imposed fixed ceilings on new borrowing, debt servicing, and the total stock of debt. The most important constraints imposed were: i) new credit operations could not surpass 18 percent of net current revenue; ii) interest payments and amortizations could not surpass 13 percent of net current revenue; iii) the revenue from credit operations could not exceed capital expenditures (the "golden rule"); iv) the stock of state debt could not exceed 2 times net current revenue in the period up to 2008, after which the debt stock must be less than or equal to net current revenue; v) the rollover of the debt could not exceed 95 percent of the debt stock; vi) credit operations based on anticipated revenues ("Budgetary Revenue Anticipation" or ARO operations) could not exceed 8 percent of net current revenue; vii) credit operations were forbidden six months before elections; and viii) credit operations through state enterprises were forbidden.

54. In addition to these controls on the demand for credit, the federal government also acted to restrict the supply of credit. First, any further intergovernmental and intra-governmental debt refinancing operations were forbidden. Second, limits were imposed on credit operations between public banks and sub national governments. Resolutions 2827 and 2920 of the National Monetary Council (passed in March and November of 2001, respectively) limit bank exposure to public sector borrowers to 45 percent of equity—a limitation that is particularly binding for the Caixa Econômica Federal which constitutes the most important source of credit supply for states and municipalities.

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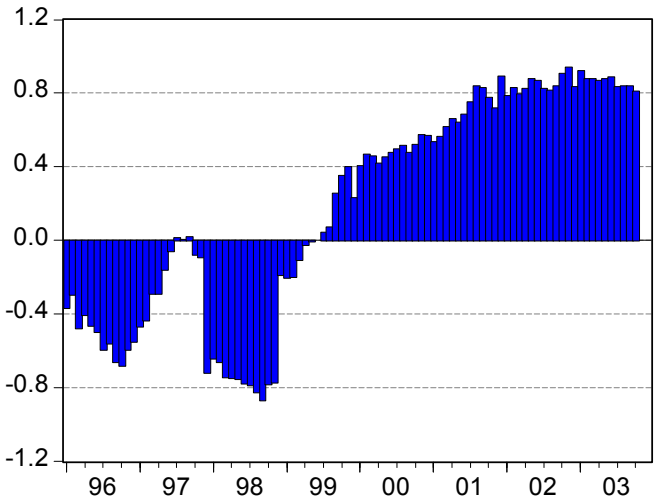
[17] Only two states (Tocantins and Amapá) did not have any bonded debt, and hence did not participate in the refinancing agreements.

55. These controls were strengthened by the Fiscal Responsibility Law (FRL), approved in May 2000, and by the accompanying Lei de Crimes Fiscais (Law of Fiscal Crimes). The FRL consolidated many restrictions and regulations into a single unifying framework. The three main elements of the FRL are: (i) the explicit prohibition of debt refinancing operations between different levels of government, eliminating the moral hazard problem that led to the frequent federal government bailouts of the lower-level governments; (ii) the clear setting of limits on personnel costs, credit operations, loan guarantees and total debt, though the specific values were left to be determined by the Senate in separate resolutions; and (iii) the obligation imposed on governments to plan their finances based on annual budget targets.[18]

56. The results were immediate, and what is more important, permanent (Figure 13). The aggregate annual primary surplus of states and municipalities improved by 1.1 percent of GDP over e period 1999 to 2003. State and municipal debt stabilized despite the adverse macroeconomic environment characterized by low growth and exchange rate devaluation, factors that ordinarily have a negative impact on public debt ratios.

Figure 13
Primary Fiscal Balance of States and Municipalities in Brazil 1996-2003
(in percent of GDP)



Source: Bacen

[18] Senate Resolutions 40 and 43 of December 2001—which are complementary to the LRF —stated that the ratio of personnel expenditure to net current revenue must be below 50 percent for the federal government, and below 60 percent for states and municipalities (with specific ceilings set individually for the Executive, Legislative and Judiciary branches). These Senate resolutions also imposed a ceiling for the ratio of debt to net current revenue of 2 for states and 1.2 for municipalities; a timeframe of 15 years was set for convergence to these limits. A comparison between the key constraints of Senate Resolution 78 of 1999 and the subsequent Resolutions 40 and 43 of 2001, for the states and municipalities shows that the restrictions imposed by Resolutions 40 and 43 are somewhat less stringent than those of the earlier Resolution 78

57. The LRF also enforced fiscal discipline by requiring that new and permanent expenditures could not be approved by Congress without corresponding increases in permanent revenue or cuts in other permanent spending items. During electoral years, governments are not allowed to make new spending commitments unless these can be executed before the end of the incumbent's term in office. In addition, credit operations are banned in the 8 months prior to each election.

B. POSSIBLE IMPROVEMENTS TO THE FISCAL COMMITMENT MECHANISM

58. There are several aspects of the FRL that can be improved. First, the triennial targets are not binding, so the emphasis of macro-fiscal planning is mostly limited to one-year horizons. Second, the FRL does not distinguish clearly the objectives from the instruments The current objectives, namely of "responsible fiscal management" and "correction of deviations from equilibrium in the public accounts", could be made more precise by stating the gradual reduction of debt level as the objective and the primary fiscal balance as the instrument. Third, the FRL does not explicitly state how the target levels for the primary balances would be set. Fourth, the "golden rule,"[19] enshrined in the Brazilian Constitution since 1988, and defined more precisely in the FRL, has played a limited role in controlling real indebtedness and in avoiding fiscal expectations of debt crisis.

59. Though there are certain problems with the *golden rule* as a policy guide, it could be worthwhile considering some simple modifications that would render it a more useful tool. The main conceptual problem with the golden rule is that it does not guarantee the maintenance of a constant debt ratio, and much less fiscal solvency. This is because it is not derived from a comprehensive public sector's balance sheet leaving aside important risk positions such as contingent liabilities (Buiter, 2001). Another problem with the golden rule is that it limits borrowing to capital expenditures with the supposed objective of maintaining constant the government's net worth, but by not contemplating the efficiency of investment it is no guarantee of intertemporal solvency.[20] The golden rule may inhibit the realization of highly productive investments, or may allow the realization of "white elephant" projects. This sets an important agenda for future work on evaluation of public expenditure and its returns as a necessary complement for the analysis of sustainability of public finances.

60. Despite its problems, the golden rule can be a useful complement to other fiscal policy guidelines with some minor modifications For instance, the indebtedness figures should include changes in contingent liabilities and changes in risk positions of the central bank, like the Swaps, that are not included in regular credit operations. Both the contingent liabilities and the swaps are transparently reported in the LDO and in the

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[19] The rule stating that governments cannot borrow more than the equivalent of their capital expenditure, or alternatively, prohibiting governments to borrow to finance current expenditures. The objective is to distribute the cost of the investment project (and the taxing to finance it) in a manner that reflects the distribution of the benefits through time.

[20] Another problem with this rule is the potential for creative accounting, and the classification of expenditures into current or capital

central bank reports, respectively, but are not incorporated in these estimations. Regarding the golden rule, as it is applied in Brazil, capital depreciation expenditures are not deducted from the gross investment figures, implying that indebtedness might end up being higher than the level consistent with an efficient distribution across generations of the cost of current public investment projects. Hence, capital expenditures figures should refer to the net of depreciation charges in order to maintain the public sector's net worth constant.[21] Considering that the net public capital stock to GDP is approximately 40 percent of GDP and the average depreciation rate is 2.5 percent of GDP,[22] the indebtedness limit should be of the order of .8 percent of GDP per year lower than the limit actually used. These calculations and discussions should be made public and reported transparently jointly with the rest of the debt operations that are already disclosed.

61. To improve the fiscal decision-making process, Wyplosz (2003) proposes delegating the task of setting the primary surplus to a committee of experts that would have fixed-term appointments. The objective of this delegation would be to isolate this decision from the influence of particular interest groups, and draws from the success of monetary policy in defeating inflation throughout the world. Taxation levels and public expenditure composition should be decided through the normal democratic processes. There is no example in the world of a delegation of this kind, though the Maastricht Treaty can be considered a delegation to a supranational authority to impose limits on the size of the overall fiscal balance and the public debt.

62. The design of a fiscal rule that explicitly and effectively binds the primary surplus to some ***medium term*** objective would be an alternative institutional commitment arrangement. Brazil, has advanced in this respect, as the 2004 Budget Directives Law (Ley de Directrices Orcamentarias, LDO) already postulates a target debt level of 51% of GDP for 2006. As mentioned before, progress can be made by making this target binding, and by explicitly stating how the primary surplus would evolve to meet the medium term objective. Nevertheless, the current approach is right on the mark, as it pays attention to first-order considerations, such as the importance of reducing the debt level, though it might neglect other issues. It would be desirable to advance in this same direction with any additional work on this topic.

63. There are many considerations and features that fiscal commitment mechanisms should have (Kopits and Symansky, 1998; Buiter, 2003). We will focus in a few. In particular, rules should be well defined in terms of clarifying differences between the objectives and the policy instruments; rules should also be well defined regarding the institutional coverage, and exit clauses. As mentioned before, the FRL is exceptional in terms of the coverage but could improve on the other definitional aspects. The second feature that the rule must have is transparency. There should be no room for creative accounting, and any data changes or revisions, as well as changes in coverage of the statistics, must be carefully explained and statistically In this respect, Brazil has

21 For detailed discussions on the measurement issues of public investment, and its relation with public borrowing, see Robinson (1998), Blanchard and Giavazzi (2003) and Buiter (2001).
22 These are IPEAs estimates.

advanced significantly with the Fiscal Risk Annex that is yearly presented in Congress. However, further progress may be possible by exploring the linking of the annex and the risk analysis with yearly budgets presented to Congress.

64. Two other benchmark characteristics for fiscal rules (Kopits and Symansky, 1998; Buiter, 2003), namely simplicity and flexibility, may imply trade-offs. Simplicity entails that rules should be highly visible and easily verifiable; flexibility involves accommodation of deviations from the targets due to exogenous factors, without breaking the rule. A best-practice rule balances the tension between these two requirements. Some analysts prefer simplicity to avoid any negative impact on credibility. For instance, Woodford (2001) proposes two very simple fiscal rules: one sets the primary balance as a function of the public debt level (or deviations of it from a target level), while the other postulates a target for the overall public balance (including interest payments) not to exceed certain level. He shows that these types of rules, combined with inflation targeting regimes create the right environment for stable and low inflation. The problem with simple rules is that there is no room for the use of judgment or extra-model information. If agents learn through time or there is new information, revisions of the rule will conflict with the commitment, unless the recommitment option is embedded.[23]

65. The most common call for flexibility comes from the allowance of automatic stabilizers to operate during the business cycle. The allowance of automatic stabilizers adds complexity to the rule, because of the computation of the cyclically-adjusted fiscal figures. If it is considered that this additional complexity outweighs the costs in terms of lost transparency and simplicity, then the task should be delegated to an independent and highly technical committee. Ideally, the central bank would play the leading role to ensure the coordination with monetary policy. Flexibility can also be achieved by setting medium term targets that go beyond the business cycle.

66. To summarize, the more practical approach to ensure a credible commitment for fiscal policy would be one that sets the primary balance as the instrument to achieve a determined target debt level and simultaneously allows for deviations of output from its potential level. A variant of this type of rule has been proposed for Brazil (Wyplosz, 2003) and posses several hurdles for implementation. The first challenge is to determine the target public debt level. The desired or prudent debt to GDP level is something that depends on structural characteristics of the economy, on the country's own history, and on the international environment. This implies that it is very difficult to stipulate a figure both conceptually and empirically. At a more intuitive level, it can be argued that a lower debt level is preferable given that future debt service implies future taxation and there seems to be consensus on the upper limit that tax burden has reached in Brazil. Brazil has advanced in setting 51 percent of GDP as the target level for 2006.

67. The proposed fiscal framework would be such that debt targets would be set for three or four year horizons. When the debt ratio reaches the target level or at the end of the planning horizon, authorities would reconsider a new ***and lower target*** for the new medium term horizon. This sequential targeting is a form allowing some flexibility of

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23 The problems with simple rules are pointed by Svensson (2003) in the context of monetary policy rules.

recommitting or incorporating new information, which is essential for simple rules to work. The second practical problem is the relative weight to assign to each of the two arguments of the rule, namely the deviations of the debt ratio from the target level and the deviations of output from its potential level.[24] Society will have to decide on the relative weights assigned to each and those parameters can change through time. As the debt targeting mechanism gains credibility and the public debt level effectively moves to lower levels, more weight can be assigned to the automatic stabilizers argument, but in the initial stages the debt-stabilization argument is of first order of importance.

68. While this report argues for a more explicit and binding commitment for fiscal policy at the macro level, it is important to recognize that the strategy will only be possible and credible if the government has more flexibility at the micro level in the resource allocation. To the extent that the government has little control over revenues, due to ear-marking and revenue-sharing, and over expenditures due to constitutional mandates and entitlements, the burden of the adjustment falls on capital expenditures and revenue-increasing, which impose limits on the sustainability of adjustment.

IV. CONCLUSIONS AND MAIN LESSONS

69. During 2001-2002, a series of domestic and external shocks derailed the Brazilian economy despite its significant progress in building a policymaking framework in the previous years. This happened, to a large extent, due to policy rigidity that resulted both from structural factors and short-term political circumstances. This report examined the causes and described the consequences of this policy rigidity with the objective of suggesting avenues for further development of a policymaking framework that facilitates shock absorption.

70. The supply and international capital markets shocks that affected Brazil caused the currency to depreciate, which, in turn, affected adversely the debt indicators. Without any fiscal policy adjustment, markets were concerned with the government's ability to meet its future obligations. This uncertainty was compounded by political considerations revolving around the stance of future fiscal policy and the willingness of the new administration (regardless of who won the election) to meet its payments. In these circumstances, the government's budget restriction had to be balanced either through inflation or a fall in the prices of government securities. Both options were inconsistent with stable prices and were obstacles for the central bank's anti-inflationary task..

71. The increased uncertainty generated a fall in the demand for government bonds, which forced the central bank to intervene in the market by: (1) printing money to redeem

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24 The fiscal rule could be of the following type: $s_t = \bar{s} + \alpha(b_t - b^*) + \beta(y_t - y^*)$ where b* and y* are the target debt levels and potential output respectively. The two coefficients should be positive and reflect society's preferences. The constant term, $\bar{s}$, is the value of the primary balance in steady state and when the debt target has been achieved, and should be equivalent to (r*-g*)b* in a world without uncertainty.

amortizations coming due; (2) providing support for government securities' prices by holding larger shares of government bonds in its own portfolio; and (3) facilitating the change in private agents' portfolios from long-term fixed-rate instruments to shorter maturity and indexed paper. Additionally, the fall in government securities' prices caused concern on the soundness of mutual funds, that were the main holders of government debt, causing investors to withdraw their resources. In these circumstances, monetary policy had no degrees of freedom to operate.

72. When the fiscal conditions changed, meaning that the primary surplus increased and commitment to future fiscal prudence was certain, the central bank was free to raise interest rates and the economy stabilized. The main challenge for policymakers is to design a framework that ensures permanent fulfillment of these conditions, which would provide functional independence to the central bank. This independence implies that the central bank can influence inflation expectations and maintain them within specific limits to meet the inflation target. To achieve this, the policymaking framework must ensure that expectations of fiscal events, which are exogenous to the central bank, are not incompatible with price stability. Hence, a mechanism that contains fiscal expectations within certain bounds is a necessary element of an economic policy framework.

73. Fiscal rules are useful mechanisms for this purpose and Brazil has successfully experimented with one of them, namely, the Fiscal Responsibility Law (FRL). However, it may be improved in a number of ways. For instance, the golden rule could be modified to deduct depreciation from capital expenditures so that net debt cannot exceed *net investment*. In this fashion, maintaining a constant public sector net worth, which is the rule's spirit, will be more likely. A second modification of the golden rule would include variations in contingent liabilities within the credit operations and publish reports on the compliance of the golden rule. A third modification to the actual operation of the FRL would make binding the triennial primary balance and debt targets expressed in the Ley de Directrizes Orcamentarias (LDO). Any deviations from the target should be publicly explained and the corrective action be specified to ensure that, in the medium-term targets are met.

74. The commitment mechanism may be enhanced by adopting an ***explicit*** fiscal rule that targets a medium-term debt level and defines the primary balance as the instrument to achieve that objective, while allowing the operation of automatic stabilizers along the business cycle. The relative weights assigned to the debt stabilization or the cyclical components of the rule could change over time according to society's preferences. Practical implementation of this option would require attention to two factors: one, that during the initial stage, while credibility in the debt-targeting mechanism is established, higher priority be assigned to the debt stabilization argument; two, that any change allowing operation of automatic stabilizers be undertaken during the recovery phase of the business cycle to avoid lower primary balances, which would hamper credibility, during the transition period.

75. The Brazilian experience of 2001-2002 highlights four topics related to public debt management that policymakers could consider in their design of the robust framework. First, the degree and type of indexation will influence the path to equilibrium after a shock. Indexed debt, especially to the exchange rate, implies a lack of control of

the target variable. Debt indexed to the price level or to short run interest rates will limit the scope of adjusting any imbalances in the government's intertemporal budget equation through seignorage. In these circumstances, these are resolved through changes in the prices of government securities. The present value of the debt service is the adjusting factor to achieve balance when the primary surplus is predetermined and debt composition imposes limits on the ability of seignorage to close the gap.

76. Second, the maturity of public debt will also determine the type of adjustment. Short duration debt will imply a higher expected inflation or larger currency depreciation when fiscal conditions are not appropriate: given that longer duration instruments are more sensitive to inflation changes, shorter duration debt requires larger price adjustments to obtain the same reduction in value in the event that agents expect the intertemporal fiscal balance to be adjusted through inflation.

77. The third topic related to public debt management that should be contemplated in the robust framework is the need for its coordination with monetary and financial policies. This is especially relevant when debt is of short maturity because both the Treasury and the central bank will be operating on the same end of the yield curve. As a result of this coordination, the central bank and the capital market regulators have to be aware of three issues regarding the holders of public debt: (i) the importance of having balance sheets that adequately reflect the value of intermediaries' assets, and hence a mark-to-market regulation. In case this regulation does not exist, the timing of the transition between accounting systems should be limited to low volatility episodes; (ii) financial regulators should have timely and realistic information about the risks assumed by agents trading public securities. Prior to the crisis, mutual funds bought long-term government paper funded with highly liquid liabilities, assuming liquidity risk. This was possible, in part, because of improper disclosure of information to depositors that were guaranteed a risk-free return. Hence the end-holder of public debt did not have the proper elements to assess the true risk of the instrument; (iii) the natural tendency of financial intermediaries to concentrate public bond holdings should not be accentuated by regulations such as allowing public bonds to compute as reserve requirement holdings.

78. The fourth topic related to public debt management refers to the various trade-offs implicit in the task, which may affect future debt levels, prices of government securities, or fiscal policy. All of these exacerbate uncertainty. The Brazilian experience reveals a tendency of the public sector to provide exchange rate and interest rate hedges to the private sector at the expense of higher debt levels as risks materializes. In 2001, the roll-over risk reduction was achieved at the expense of higher exchange rate risk which materialized into higher debt in the following year as the currency depreciated. During 2002, rolling over the public debt was possible because the central bank intervened heavily in the market to support bond prices and facilitated changes in private individual portfolio composition from fixed rate instruments to indexed instruments of shorter maturities. This intervention was necessary, to a great extent, because of the absence of well-functioning secondary markets for government securities. This development, as well the gradual reduction of the provision of hedges to the private sector, will facilitate the transfer of risk from the government's balance sheet. This is a

necessary element to reduce uncertainty about the future stance of fiscal policy, and hence an important complement to the fiscal rule.

79. While this report argues for a more explicit and binding commitment for fiscal policy at the macro level, it is important to recognize that the strategy will only be possible and credible if the government has more flexibility at the micro level in the resource allocation stage. Fiscal rules have to be underpinned by structural reforms that allow the government to control closer its revenues and expenditures. To the extent that the government has little control over revenues due to ear-marking and revenue-sharing, and over expenditures due to constitutional mandates and entitlements, the burden of the adjustment falls on capital expenditures and revenue-increasing, which impose limits on its sustainability.

80. The issues discussed in this report highlight the need for a parallel work agenda in "micro" issues related to the analysis of sustainable public finances. First, on the effect of fiscal policy and long run growth, there is a need for better understanding of the impact of different types of government expenditures and different types of taxation on growth and welfare. Second, a more in-depth sustainability analysis should be grounded on the comparison between the social rate of return of public expenditures and the social opportunity cost, including the possible costs associated with future distorting taxation. Hence the design and implementation of this evaluation method is of first-order importance. Finally, application of the golden rule requires estimates of the rate of depreciation of public capital.

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